A Computer System to Store Cytological Findings Using the Bethesda Classification.

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One critical aspect of quality assurance in cervical/vaginal cytology is the communication of the cytopathologic findings to other physicians in unambiguous diagnostic terms that have clinical relevance. The NCI (National Cancer Institute, Division of Cancer Prevention and Control) has developed the Bethesda System for reporting cervical/vaginal diagnoses, replacing the numerical Papanicolau (PAP test) class designations[1]. This system should be used as a guideline for cytopathologic reports of cervical/vaginal specimens. In Brazil, data from PAP test are still widely used for public health purposes for the development of preventive measures against cervical cancer.

We have developed a computerized system that stores data from cervical/vaginal cytology using the Bethesda Classification, but also take into account the Papanicolau classes. The system was developed in 1992 at the Clinics Hospital of the University of Sao Paulo and is now widely used as part of the Laboratory System.

The System was developed with 3 main purposes:

- To provide a Computational tool to store cytopathologic findings of cervical/vaginal specimens using Bethesda's Classification.

- To provide an efficient and faster way of communicating the cytopathological findings to the physicians in the hospital.

- To generate efficient and unambiguous reports to public health entities that could be used as a source for preventive measures.

THE SYSTEM

The pathologist enters plat findings through a questionnaire organized according to the p Classification. Information from the Papanicolau class is also required. The data are stored using an internal coding scheme that can be mapped to SNOMED (Systematized Nomenclature of Medicine) terms. For instance, if we have a report:

"Specimen is satisfactory for interpretation..., ...High-grade squamous intraepithelial lesion: cervical intraepithelial neoplasia, grade 3 (CIN 3)..", the system will necessarily store these three sentences with three internal codes, which correspond, respectively, to SNOMED codes M00480, M69700, and M69730. Unfortunately, the interface of the system is not so pleasant, as it was built using Mumps language for an IBM Mainframe running VM/ESA operating system.

The system is now three years old with, approximately, 48.000 reports stored in the Mumps hierarquical database and has reached its main purposes. One feature not implemented yet, is the development of alerts that can be retrieved when inconsistencies between the Bethesda report and Papanicolau class are found. We have some alerts built in SQL (Structured Query Language) that are not implemented due to the hierarquical model of the system. The use of such alerts will be complete for the next years as we are migrating to a relational platform with distributed database. If we can accomplish to use all these features of the system, we expect to reduce redundancy and incorrect classifications, thus enhancing the quality of care and providing more efficient prevention of cervical cancer in our patients.

References

1. Lundberg GD. The 1988 Bethesda System for reporting cervical/vaginal cytological diagnoses. JAMA 1989; 162: 931-4.